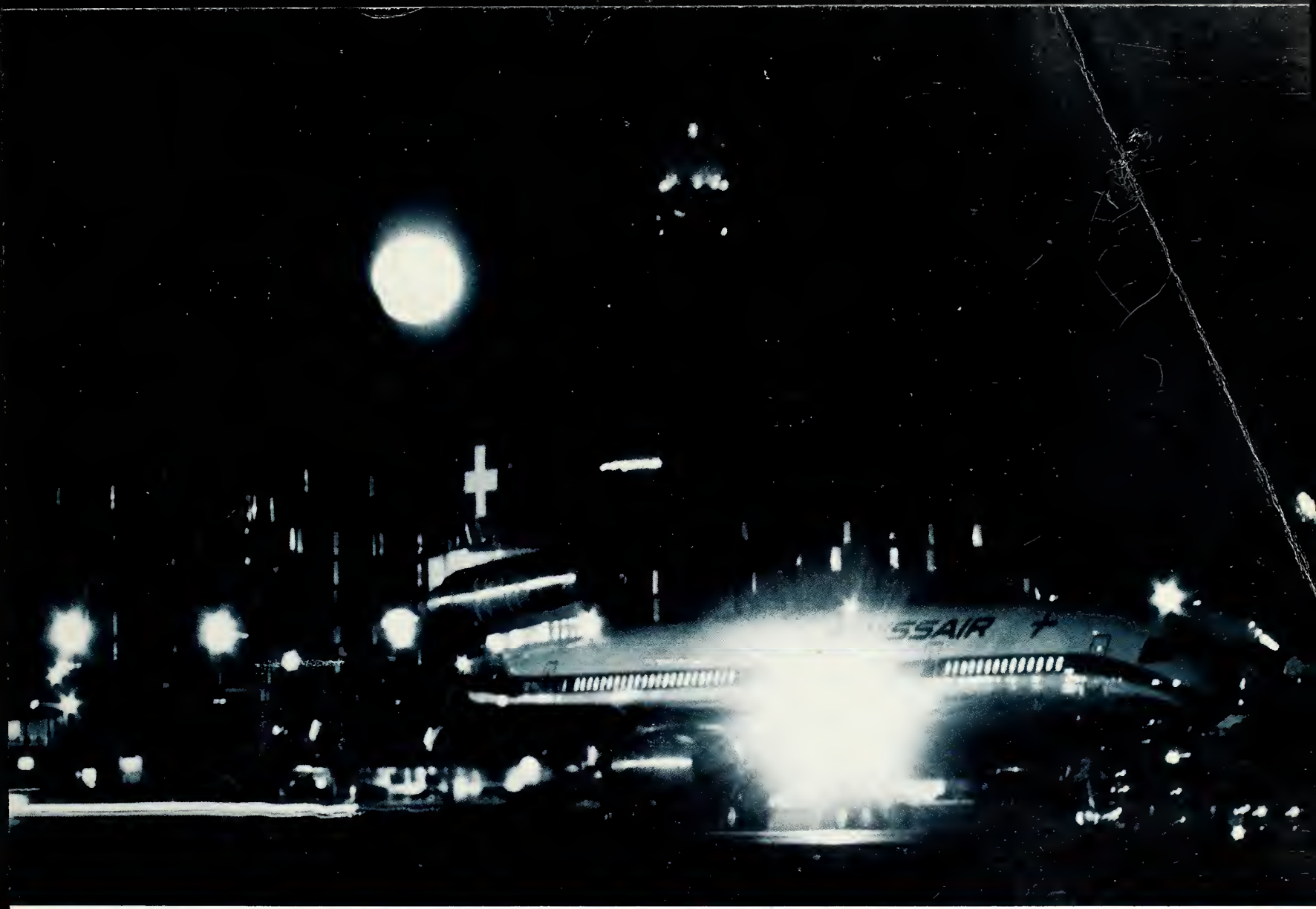

CHICAGO O'HARE INTERNATIONAL AIRPORT

WITHDRAWN

TRAN
HE
9797.7C4
C532u

Property of
CTA
Library

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION GREAT LAKES REGION

SMSA
HE
9797.5 United States. Federal Aviation Administration.
.U5
U58 Chicago O'Hare International
1976 Airport.
c.2

The Federal Aviation Administration of the Departmen Transportation is the arm of the United States Government re sible for the promotion, regulation and safety of civil aviation for the safe and efficient use of airspace which is shared by bo civil and military aircraft.

The FAA is the steward of this giant system which com a sophisticated network of airports, airways, air traffic contro facilities, aircraft and airmen. FAA personnel concern themse primarily with the safe day-to-day operation of the National A space System.

FAA's responsibilities begin at the drawing boards whe craft are conceived and at the factories where they take shape responsibilities continue with the men who dispatch the aircr from airports, the pilots who fly them, the aviation mechanic maintain them and the specialists who control them in flight. responsibilities include the use of airspace, the navigation aid airway system, the airports, and finally the research that will American civil aviation out in front.

Chicago O'Hare International Airport is an excellent e of the Federal Aviation Administration at work. Each day, of aircraft arrive at and depart from the world's busiest airpo cause of the efficiency and dedication of FAA personnel. A the FAA maintains a team of pilots, maintenance inspectors neers, electronic technicians, air traffic controllers and secur to ensure the safe and orderly operation of the airport.

TRAN
HE
9797.7C4
C532u

WITHDRAWN

CHICAGO O'HARE INTERNATIONAL AIRPORT

Following World War II, the City of Chicago, realizing that Midway Airport would eventually reach a saturation point, began searching for a second Chicago airport. This search led to Douglas-Orchard (ORD), an airport located approximately 15 miles northwest of downtown Chicago. The airport had been built during World War II by the Douglas Aircraft Company for the production of large military transport aircraft.

From the standpoint of location, terrain and very basic airport facilities, Douglas-Orchard had the ingredients for further development as a major Chicago airport. When the installation was declared surplus by the War Assets Administration in 1946, the City purchased the airport and thus began the evolution of Chicago O'Hare International Airport.

Three years later, in January 1949, $2½ million was authorized for construction work, which included new terminal buildings, foundations, land acquisition, parking aprons, ramps and drainage facilities.

The airport was named in honor of Lt. Commander Edward H. (Butch) O'Hare, the United States' greatest naval aviation hero. A fighter pilot in World War II and holder of the Congressional Medal of Honor, O'Hare became an ace when he shot down six enemy aircraft on March 3, 1942. He was listed as missing in action in November 1943.

O'Hare Field, Chicago International Airport, officially opened its operation to domestic commercial traffic in October 1955, although the airport already had handled some 900,000 operations and 2 million passengers by that time. Recognizing the important international as well as national role the airport would play, the name was changed to Chicago O'Hare International Airport on December 8, 1958.

During that year, the City of Chicago negotiated and reached an agreement with the airlines for a $2 million expansion program for additional runways and terminal facilities, all at no cost to the taxpayers. The first earth-moving machine roared to life on March 30, 1959. Three years later, the modern terminal complex was open for business. It was termed one of the most outstanding engineering and construction achievements of our times.

Today, Chicago O'Hare International Airport stands as an "aviation wonder of the world." Each year, more than 40 million passengers pass through the airport, one of the most efficient airport complexes in the world. Aviation officials from around the world are continuously visiting O'Hare and observing the various procedures. Many have returned to their native countries and implemented O'Hare's procedures to increase the safety and efficiency of their own airports.

O'Hare has become an economic giant in the Metropolitan Chicago Area, employing more than 35,000 persons and contributing billions of dollars each year to the economy of the area. O'Hare is the second largest employer in the metropolitan complex.

Property Of
CTA
Library

THE FAA

The Federal Aviation Administration (FAA) has one responsibility - safety in the skies. It achieves this goal by many means, including the regulation of pilots, the certification of aircraft, airport construction, air traffic control, the installation and maintenance of navigational aids and the security against criminal interference with airport and aircraft operations.

The Air Commerce Act of 1926 was the beginning of Federal regulatory control, with development of the nation's aviation potential falling within the jurisdiction of the Department of Commerce. Recognition of this new and vital industry, air transportation, came just 23 years after the Wright brothers' flight. Under the new agency, incipient systems for communications, radio aids and ground lights were improved and expanded, airport construction was encouraged, and the first Civil Air Regulations were written.

By 1938, continued growth made reorganization necessary and the independent Civil Aeronautics Authority was established; but by 1940, it was returned to the jurisdiction of the Department of Commerce as the Civil Aeronautics Administration. The Federal Aviation Act of 1958 brought aviation regulation under the independent Federal Aviation Agency, which gave way in 1967 to the Federal Aviation Administration of the Department of Transportation.

The various name changes, the different Congressional acts and the transfer from one cabinet level department to another, reflect the rapid growth and increasing importance of aviation in our daily lives. The later changes were the Government's response to an aeronautical revolution brought about, in part, by the military requirements of World War II. At war's end, larger and faster aircraft were ready for service and airlines were expanding in all directions, both in the U. S. and around the world. The nation's technological resources were diverted to civil uses, to refinement of radar, to safety devices such as direction finders, and the most spectacular development of all - commercial jet aircraft.

Light plane production picked up, with annual production doubling from 1949 to 1958. The number of private pilots doubled in the decade following the war. But, while all this growth was taking place, ground assistance to aircraft in flight remained virtually static. When FAA came into existence in 1958, the airways were crowded, the air traffic control and communications systems obsolete and overworked, and the usable airspace, once considered limitless, had reached capacity.

FAA's first task was to ensure maximum utilization of the airspace by civil and military users alike. Second, a lengthy and more difficult task, was to modernize the airways. Growing demands were met by accelerating purchase and installation of electronic equipment, by development of new traffic control systems, aeronautical weather systems and services.

The present tremendous economic impact of aviation is evident in exports, manufacture of aircraft and components, employment, and transportation of people and cargo. To enhance and maintain a vital aviation industry, FAA issues and enforces rules, regulations and minimum standards relating to aircraft, airmen and airports; establishes and preserves the efficiency of naviagtional aids in the National Airspace System; operates an elaborate computerized air traffic control system; and carries on a continuing program of research and development for the future.

FAA's system of air traffic control and the nation's air navigation aids are the model for world aviation. A network of advanced facilities involves exceptional teamwork among FAA's 55,000 employees. Air traffic control is accomplished through some 400 airport traffic control towers at airports with a high level of activity, through two dozen air route traffic control centers spaced approximately 200 miles apart across the country and into Alaska and Hawaii, and through over 350 flight service stations located in strategic areas around the country. Navigation aids provide guidance throughout the National Airspace System and promote the efficient utilization of the navigable airspace. Both the air traffic control and the navigational aids networks are used by civil and military aircraft for a combined system designed to provide optimum safety in the skies.

FAA's responsibility for promoting a national system of airports is accomplished through Congressional acts which provide funds for expansion, improvements and establishment of new, better and safer public airports. Those airports servicing certificated air carriers are inspected regularly by FAA for compliance with safety and security regulations.

While the more important goals of the National Airspace System are being met, there is a continuing mandate to keep abreast of, if not ahead of, the soaring demands of aviation.

The FAA has played a key role in the development of Chicago O'Hare International Airport. Millions of dollars have been spent in a continuous effort to make O'Hare the most efficient airport in the world. The Federal Government has been an equal partner with the City of Chicago and the airline companies in developing O'Hare. Funds provided by the Congress have been used for airport expansion and improvement in order to keep pace with the continuous demand for aviation services in the Chicago area.

THE TOWER

FAA specialists in the airport traffic control tower at Chicago O'Hare International Airport direct the safe and efficient flow of aircraft into and out of the Chicago Metropolitan Area. The tower rises nearly 200 feet above the ground and features the latest, most modern systems available for use by the controllers. The present tower, placed in operation in May 1971, is owned and operated by the Federal Aviation Administration. There are 125 air traffic controllers authorized at the tower. Seventy electronic technicians are assigned to the facility.

The heart of the airport traffic control tower cannot be seen by the millions of passengers utilizing the airport as the IFR (radar) facilities are below ground. This underground structure, in addition to housing the radar room, also provides space for a computer complex, electronic equipment, stand-by power facilities and administrative offices. The cost of the tower and equipment totals more than $6 million.

Air traffic controllers at the airport handle nearly 700,000 aircraft operations each year. They are responsible for directing not only the movement of all aircraft operations at O'Hare, but also all instrument operations within the Chicago Metropolitan Area. This includes radar services for flights at Midway, Meigs, Pal-Waukee, Glenview Naval Air Station and several other airports in the local area.

The tower provides 27 operating positions, 8 in the tower cab and 19 in the radar room. The panoramic view from the tower cab enables controllers to monitor virtually the entire airport, including all of the runways and taxiways, thus permitting the safe and expedient movement of air traffic.

THE TOWER CAB

Controllers in the tower cab, located atop the pentagonal concrete shaft in the center of the terminal complex, separate aircraft as they land at or depart the airport, as well as direct the safe and orderly flow of aircraft and vehicles on the airport surface itself. A number of radar facilities have been installed in the tower cab to permit the controllers to carry out their responsibilities under adverse weather conditions. Some of the runways are actually located two miles from the tower cab so that, in minimum weather conditions, the radar facilities are utilized by the controllers.

FLIGHT DATA SPECIALIST

Because there is very little change in the daily schedule used by the airlines, all important information pertaining to specific flights is stored in a computer. Approximately one hour before a flight is to depart O'Hare, the computer will print a "flight strip" and feed it to a controller operating position known as "flight data specialist." It is his responsibility to coordinate and post this flight data information so, when the flight is ready to depart the airport, all the data is readily available. After assuring the information is correct, the flight data specialist will then pass the "strip" to the clearance delivery controller.

CLEARANCE DELIVERY CONTROLLER

Before taxiing, the crew of an outbound aircraft contacts, by radio, the clearance delivery controller in the tower. The controller then issues to the departing aircraft its route of flight, its altitude and other information pertaining to the flight as it is printed on the flight strip. To ensure accuracy, the crew is required to repeat the transmission to the controller. Once this procedure is completed, the control of the aircraft passes to the outbound ground controller.

OUTBOUND GROUND CONTROLLER

The outbound ground controller is responsible for the smooth flow of traffic from the terminal gates to the active runway. O'Hare has a number of taxiways which provide the outbound controller with various routes from the terminal area to the runways free of inbound traffic. After the aircraft reaches the active runway and is ready for takeoff, control of the aircraft is then assumed by a "local controller."

LOCAL CONTROLLER

Local controllers have the responsibility for separating both arriving and departing air traffic. Normally, there are two local controllers working in the tower cab, and each handles aircraft arriving and departing on two runways. Under ideal conditions, O'Hare operates on a minimum of four runways. Once traffic permits, the local controller clears the departing aircraft for takeoff. Then the responsibility of control is transferred to the radar room.

The procedures for arriving aircraft are basically the same, with a local controller clearing the aircraft to land and the ground controller assuming the responsibility of separation once the aircraft is clear of the runway.

WEST ARRIVAL CONTROLLER

The West arrival controllers have the same responsibility as the East arrival controllers. The only difference is that the traffic they handle arrives in Chicago from the West.

PARALLEL APPROACH MONITOR

When weather conditions require, a parallel approach monitor ensures that aircraft making simultaneous approaches to parallel runways do not exceed minimum parallel separation. He normally monitors parallel approaches from about 16 miles out until landing is achieved. He has an "override" factor on his radio which permits him to intervene on any radio frequency in the event of aircraft getting too close.

FLIGHT INSPECTION

All of the electronic navigational aids at the nation's airports, such as Chicago O'Hare, and the en route navigational aids which assist pilots throughout their flights, are under constant evaluation and monitor checks by airborne FAA flight inspection teams. At Chicago O'Hare, FAA aircraft, carrying sophisticated electronic monitoring equipment, are continuously checking and double checking all of the electronic systems used. These "flying laboratories" are based at Battle Creek, Michigan, but spend much of the time over the skies of Chicago assuring total accuracy of the navigational systems.

There are 12 electronic landing systems at Chicago O'Hare which permit aircraft to land safely under minimum weather conditions. Although these systems have their own monitors which alert electronic technicians if there is a malfunction, they are still checked continuously by FAA aircraft in the air.

Because of the tremendous amount of traffic at O'Hare, much of FAA flight inspection is done at night so as not to interfere with the movement of commercial traffic. If, for some reason, one of the electronic navigational aids does develop a problem, a flight crew is dispatched immediately from Battle Creek to check the system. This is done on a 24-hour basis.

In addition to checking the navigational aids in and around airports, FAA flight inspection teams fly various aircraft across the country, ensuring the accuracy of all navigational aids used in the movement of air traffic. Because of the efficiency of FAA flight inspection crews, many foreign countries pay the United States' Federal Aviation Administration to perform similar functions in their airspace.

SECURITY

FAA's security program at O'Hare is of prime importance because of the large volume of aircraft, air travelers and airport visitors, the great number of aircraft loading gates, the many runways and other facilities - more than anywhere else in the world.

There have been no successful hijackings of scheduled aircraft at O'Hare or in the United States since passage of the Federal Aviation Regulation establishing the security program in mid-1972. Continued hijackings and criminal acts against aircraft and airports abroad made it necessary to add international carriers to the program in 1975.

Aviation security specialists in O'Hare's Air Transportation Security Field Office administer FAA's anti-hijacking program. The specialists themselves do not screen passengers and visitors, but rather monitor and inspect predeparture screening programs for the 13 scheduled domestic passenger and 12 foreign airlines regularly using O'Hare. They give advice, counsel and guidance to airlines' personnel performing the screening, provide orientation for new employees in the airlines' security programs and retest older employees.

In addition, security specialists act as coordinators and a liaison point between the airlines, the airport management, law enforcement and investigative units and other Governmental agencies on security matters. Monitoring and inspection includes facility protection, perimeter control of access, policing and guard service. Security specialists work directly with the FBI on all matters of criminal activity committed against the airlines or the airport.

Federal Aviation Regulations prescribe the results to be achieved under the security program, rather than the methods to be used, so that each of the airlines' activities can be slightly different. All, however, involve personal observation by an airline security officer of each passenger and visitor to departure areas, as well as a mechanical surveillance.

Airlines depart from O'Hare on frequent schedules, not only to major points within the U. S. but also to Canada, Mexico, the Caribbean, Europe and the Orient.

AIR CARRIER DISTRICT OFFICE

All airline aircraft maintenance methods and procedures at O'Hare are monitored under a continuing surveillance program by FAA specialists from the Air Carrier District Office to assure the continued safety of aircraft in flight. In addition, each airline flight crewmember based at O'Hare is evaluated to determine continued proficiency as pilots and flight engineers. There are some 5,000 flight crewmembers and nearly 1,500 certificated mechanics based at O'Hare.

Air carrier flights account for well over half a million arrivals and departures at O'Hare annually. These are conducted by 23 U. S. and 12 foreign airlines whose activities pertaining to operations and aircraft maintenance are monitored constantly. Cargo and charter airlines are included in the program.

Pilot inspectors from the operations unit, each certificated in specific types of aircraft, fly in the cockpit of airline aircraft in order to make their evaluations of crewmember proficiency. Certificated maintenance inspectors monitor repairs and alterations performed at O'Hare on aircraft and engines. The specialists also regularly inspect the carriers' maintenance bases at O'Hare to insure adequacy of facilities and procedures. Avionics unit specialists perform similar tasks at avionics facilities, where aircraft instruments such as airborne radar and radios are maintained and installed.

In addition to these specialized functions, the air carrier personnel conduct surveillance of airline facilities and procedures for transportation of hazardous materials at O'Hare.

The Air Carrier District Office maintains a liaison with the City of Chicago's Department of Aviation, operator of the airport, during periods of repair or construction on the airport or its facilities to assure the safety of aircraft operations. The specialists also are responsible for investigating and reporting violations of Federal Aviation Regulations.

AIRPORT SERVICES

The Federal Aviation Administration has played a major role, from the beginning, in the development of Chicago O'Hare International Airport. In participation with the City of Chicago and the State of Illinois, the Federal Government has shared in the cost of land acquisition necessary for airport growth and development and construction of improvements other than the terminal complex itself. Airport development programs include construction of runways, taxiways and aircraft parking ramps and the installation of navigation aids.

The continuing development has been accomplished under the Airport and Airway Development Act of 1970 through the Federal Aid to Airports Program and the Airport Development Aid Program administered by the Federal Aviation Administration of the Department of Transportation.

By 1975, there were 26 Federal-aid projects for development at O'Hare, of which the Federal share of the project costs exceeded $45 million. Of this amount, some $8 million has been used to acquire land for airport expansion and approximately $1.5 million for building construction. The remainder has been used for runway and taxiway construction, lighting, apron expansion and other development on the airports' 10,000 acres.

In compliance with the Federal Aviation Act of 1958, amended by the Airport and Airway Development Act of 1970, the FAA is authorized to issue airport operating certificates to airports serving air carriers approved by the Civil Aeronautics Board and to establish optimum safety standards for the operation of these airports. Chicago O'Hare was one of the first airports in the nation to meet the requirements.

Equipment and training standards for fire and rescue programs are a major part of the certification program. Around-the-clock teams of specially trained Chicago Fire Department personnel man the main fire station, located in the center of the O'Hare complex, and two strategically located satellite stations. The City of Chicago maintains the 16 crash-fire-rescue vehicles used for emergency services at O'Hare. The annual $3 million cost is shared by airline companies serving O'Hare. FAA has funded the satellite stations and some of the specially designed fire equipment.

To keep pace with the continuing growth of aviation and the increasing domestic and international activities at O'Hare, the City of Chicago, together with the FAA and the Illinois Division of Aeronautics, has entered into a three-year Master Planning Program, which represents the City of Chicago's concept of the tremendous needs, up to the 21st century, of the world's busiest airport.

AIRWAY FACILITIES

The importance of O'Hare as the hub of the National Airspace System requires installation and maintenance of a vast network of sophisticated electronic and visual navigational aids, radio communications equipment, radar and computers to assure the safety and efficiency of the airport and air traffic.

At O'Hare, 65 men and women of FAA's airway facilities sector work shifts around the clock to maintain this vast array of diverse equipment at the top level of proficiency and accuracy. Their ability to perform efficiently at any hour and during the most adverse weather conditions is evident in the dependability and reliability of navigation and communications aids.

Most of the 125 facilities monitored and maintained by sector technicians are in FAA's airport traffic control tower at O'Hare or on the airport itself, but some are as far away as Waukegan's Memorial Airport, where there is a remote transmitter for improved radio communications with aircraft. Sector technicians also monitor and maintain tower communication equipment, a remote transmitter and an instrument landing system at Pal-Waukee Airport in Wheeling and an electronic guidance system in nearby Northbrook.

Chief among the separate facilities at O'Hare is the ARTS III - automated radar terminal system - with its intricate computer complex and digitized-display radarscopes.

There are 11 ARTS III radarscopes to maintain in the darkened TRACON - terminal radar control room - where air traffic controllers check on aircraft operating within a 35-mile radius of O'Hare. In the neighboring computer room there are two additional radarscopes which can be used as monitors or as replacement equipment. In the tower cab are four radarscopes with dual capability: as remote ARTS III displays or as ASDE - airport surface detection equipment - displays for depicting the ground area. O'Hare was the first airport to have operating ARTS III equipment.

The many different types of navigation and communications aids demand exacting standards and highly skilled technicians, particularly as O'Hare's priority in the National Airspace System results in installation of the latest, most modern equipment, before it is available elsewhere. The sector operates an ambitious training program in order to preserve its high level of proficiency and to keep abreast of the newest equipment trends.

An important aspect of airway facilities work at O.Hare is in environmental support. The sophisticated solid-state electronic equipment, delicate instruments, printed circuit boards and hundreds of miles of wiring demand a stable environment with controlled temperature and humidity and filtered air to keep them at the highest level of operating proficiency.

Airway facilities technicians are attracted to O'Hare because of the variety and diversity of equipment necessary to keep the airport at the focal point of national aviation activity.

3 5556 030 755318

☆ U.S. GOVERNMENT PRINTING OFFICE: 1976—653-501

This publication was prepared by the Public Affairs Office, Great Lakes Region Federal Aviation Administration.

Northwestern Univ. Libr.
35556030755318
TRAN HE 9797.7C4 C532u

GAYLORD